IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF OKLAHOMA

MATTHEW DON WATERDOWN and SHIRLEY WATERDOWN, individuall and as next best friends of M.C. WATERDOWN,	)	
Plaintiffs,	)	
-vs-	)	Case No. 20-CV-285-GKF-JFJ
DAGOBERTO CHAVEZ and MTV SERVICES, LLC, et al,	)	
Defendants.	)	

DEPOSITION OF ***DAVID DANAHER***, taken on behalf of the plaintiffs pursuant to the following stipulations, on the 18th day of February, 2022, via Zoom, before Kellie Erwin, Certified Shorthand Reporter in and for the State of Oklahoma.

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Exhibit 2

A P P E A R A N C E S

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S T I P U L A T I O N S

It is hereby stipulated and agreed by and between the parties hereto, that this deposition is being taken pursuant to notice and agreement and that the same may be taken at this time and place.

It is further stipulated and agreed that all objections are reserved to the time of trial, except as to form, with the same force and effect as if made at the taking of the deposition.

to scroll.

A. Perfect.

Okay. Keep going down.

Keep going down.

Keep going down.

Yeah, I think the rest of these -- no, these won't have that in them, so I think that's all.

Q. Okay. What about some of these invited lectures?

A. So the Low Speed Override of Passenger Vehicles with Heavy Trucks; that one. So 2 and 3.

Scroll down.

Q. Goes back before the COVID when we all used to actually go to conferences.

A. I know; right. Crazy how things have changed.

Keep going down.

Just that one.

Q. Okay. So then, let's talk about the funded and supported research, any of those?

A. No, none of the rest of those.

Q. And any of your media appearances?

A. No.

Q. So have we talked about, to the best of your knowledge, on your CV here some of the places where you had some specific academic either training, input or presentation involving underride-type

Plaintiff's expert and the depositions of the Waterdowns, would you have any changes to your Conclusions or your Closing?

A. It would only be in response to Mr. Harrison's report.

Q. Okay. And we're going to go into that here in a minute. Just in a high level, would you change anything in your report?

A. No.

Q. So as we sit here today, you're not aware of any inaccuracies in your report?

A. Actually go back real quick to the Conclusions; I just noticed something.

Stop at the Conclusions.

Actually, yeah, there is an error. The time, I don't know why it says that because it's not what the rest of the body says. So the one that says "At the time" -- so, like, one, two, three, four, five -- six down it starts with "At," yeah, that 7 seconds should be 5.5. The body of the report, it's all 5.5; I don't know why that says 7.

Q. So at trial you would testify to 5.5 like it is stated in the body, not 7?

A. Yeah. That's a typo.

Q. Okay. Any other inaccuracies you're aware of in

Q. And that kind of gets into these last two lines of your Conclusions. You're talking about Mr. Waterdown's reaction time and, you know, by looking at the driver's manual, braking time; is that correct?
A. Yes.
Q. Okay. So would you say that looking at, like -- let's just pick one out of here. The driver's manual where it talks about a braking time, would you say that those are dependable objective findings?
A. I don't know how to answer that. I mean, that's what the Oklahoma Driver's Manual states are these distances; how they determine them, I don't know. It's what they related. I look at the book --
Q. Yeah, let's pull that up real quick so we're not talking in a vacuum.
A. Sure.
Q. This is Exhibit -- Plaintiff's Exhibit 6, which is the September 2017 version of the Oklahoma Driver's Manual, and, I believe, Mr. Danaher, that's the one you listed. Does that sound correct to you?
A. Yes.
Q. And I believe you said chapter 9. Flip to page 9-1.

So I've got up on the screen here a stopping distance and braking chart, and I think this is -- is this kind of the information you were just talking about?

A. Yes.

Q. And I think we -- didn't we determine the Ford was going about, give or take, 65, more or less?

A. Yes.

Q. So that would kind of put their data somewhere in between the two of these columns?

A. Yes.

Q. Okay. So that would be -- if he was 65, what's the halfway point between the first two?

So about 143 feet for reaction distance; would that be fair?

A. Hold on a second here.

Q. Yeah, check my math.

A. I had to check my own math, so, yeah, 143 is that what you said? That's what I came up with.

Q. Yeah.

A. Yeah.

Q. And on the second, I guess that's braking distance, that would be a range of, looks like, one forty-one five to two eighty-three five. Is that what you came up with?

A. Yeah, I guess -- so for the lower end it's 141, 142. Then for the higher end is 327. Is that what you -- no, no, no. Sorry. Sorry.

Was two eighty-three five.

Q. And on the total stopping distance, I got two eighty-four five to four twenty-six five on the average low and high end.

A. Yeah, that seems right.

Q. Okay. So obviously that gives us a range, you know, because there's all kinds of dynamics, you know, to enter into this.

What kind of factors enter into the dynamics whether someone is able to, you know, be at the top of their range or the bottom of their range?

A. Wow. That's a big question. I mean, from what's going on with -- how they're determining these, I'm not sure what methodology that they have to arrive at these numbers. Clearly, on something the math is -- if there's math involved here, they're not just guesswork.

But if you look at the numbers, right, so -- and this is what's interesting. So if you look at -- like, let's just take -- just to make it easier, right, let's look at 60. So they have a braking distance of 120 and 240. So if you go

through the numbers here, right, and figure out what that means in terms of deceleration, which for me is, like -- is a good way to quantify what they're doing here. Distance is helpful, I think, for a lot of people, but for me, I'm an engineer.

So those numbers represent point five to, like, 1G and so they're actually very -- the point five in a situation is kind of light, you know, and 1 is --

Q. You're stepping on it.

A. Well, it's more than stepping on it. Most vehicles can't even achieve that.

So they've been really -- they really had the extremes here in terms of, you know, when a vehicle is faced with this. And I think that, you know -- their logic behind it I'm not sure, but -- you know, that's why people kind of fall in the middle of, like, point seven; right. That's kind of where people typically when emergency braking fall, but for whatever reasons instead of using, like, what the average is they give the extents, so that's what makes it a little bit interesting. Why they -- why they did that I don't know, but they're picking pretty high and low ends.

Q. In working on your report, did you have to make any

whatnot. After your first hour of testimony, sir, do you have anything you need to revise, correct, or further clarify in your testimony?

A. No.

Q. So I believe we were talking about, you know, some of the things and -- you know, with where the trucks are and reaction time. In both my expert's report and it was referenced in yours was this gentleman by the name of, you know, Brad Muttart. I assume Mr. Muttart is -- is he kind of like the godfather of reaction times?

A. Yeah. Muttart has claimed his nitch in life. Up until Muttart, there was -- everyone used 1.5 seconds of reaction time for daylight conditions for everything and Muttart would have none of that, so he's dedicated his life in reviewing and researching naturalistic studies from your alma mater as well, right, and from a few other universities that look at reaction times of drivers in a lot of situations, so he's, you know, become kind of the predominant guy in the field right now, one of just a few, that looks at driver's actions relative to accidents.

Q. When we were talking about these reaction times and everything in here and the percentiles of where

people fall in the reaction time, did that -- that's all based on some of Muttart's publications?

A. Yes. It's on Muttart's -- you know, it's all Muttart, yeah.

Q. Okay. Because I was particularly interested in this -- on page 16 of your report talking about, you know, avoidance of the collision. You talked about the 85th percentile reaction time. Kind of walk me through this.

A. So Muttart in part of his teachings, he created files at the 1.5 reaction time. So what he's done is that he's come up with a way to look at literally thousands of data sets in terms of actual video as well as other reports and papers and literature, just a compilation of so many things. I've taken his course twice and the first time was five days solid at Northwestern. I was, like, "How could this possibly take five days?" It's very intense.

So what he's doing is that your -- eventually he's able to boil it down to something useful where you are given a situation, right, and you can say, "Look, given these factors," right, "is it daylight? Is it a cutoff?" You know, "What parameters do you put in here as far as what your

Q. Did you take into your calculations Mr. Waterdown when, you know, he would have first perceived with his preception-reaction time whether or not he could tell whether or not the truck was taking control of his far south lane or whether he was performing this U-turn activity?

A. I'm not sure if I entirely understand your question. Let me see if I can answer it. So I'm not trying to interpret what -- I'm not trying to get into the mind of Mr. Waterdown; right. Like, I'm not trying to say, you know, this is when he perceives the car to making -- you know, this is when he understands it's going left or this is when he understands he's in his lane or -- I'm not trying to figure out what he's thinking, I guess.

What we're doing - and this goes back to Muttart - is you have two things in perception-reaction time. You have the time itself, which we've been talking about, right, the 2.2 and the 1.6, so that's an absolute time. The time that they've calculated, but it's a time. The question then is, well, when do you start that clock; right? And I think that goes to your question, that's why I'm trying to answer it this way, is, you know, do you start that reaction when he's fully in the lane

in front of you or do you start that reaction when he's across both lanes or -- you know, when does that timer begin.

And so what Muttart has done to help alleviate this, is that that's why it's the first lateral movement that you apply that specific number to that scenario.

So, let's say one study they did it where they started the clock at, you know, across this certain line, right, and then another study they did it when it was referenced off of when somebody was -- you know, the steering angle of the car was 15 degrees, so there's different reference points.

So in this particular case, you're looking at -- you take the first lateral movement and you use this PRT. If you were to change it to some other position, like, if he's partially across the road, right, well, then you change the PRT.

Q. Okay. That makes sense.

A. Okay. Sorry about that. I just wanted to --

Q. No, no, no, because, you know, you and I sitting here Monday morning quarterbacking, it's impossible to know what was in someone's mind.

A. Right, so we're just trying to pick a common point for the studies.

is -- you know, if it's happening during the day, right, you take that into account. So there's all these different factors, right, including where the vehicles are located relative to each other and where the roadway -- if it's near an intersection, right, or if it's just on an open road.

So it is accounting for all of those, so I don't know how to say more or less, but it is factoring in all those different pieces in arriving at those times.

Q. So how would it factor for, like, the hazard of a vehicle moving into your lane of travel versus a hazard of a vehicle obstructing the length of the roadway?

A. You're looking at it the same way; right? It's cutting you off. It's taking up your travel lane. Part of it's taking up your whole lane or only part of your lane and, you know, going more lanes over it's the same; right? Your path of travel has been blocked, and so that's what you're reacting to.

Q. If we had started the reaction time, because I think you kind of alluded to that, when the semi crossed from the far south lane of travel into the northern lane of travel going eastbound, did you ever run those calculations?

A. I mean, you could probably with some different literature somewhere, but that's not -- I will tell you this. If you were to use that as the starting point, then those reaction times changes; right? It will no longer be 2.2 or 1.6, whatever, it will be something much shorter than that. But, you know, there's no publication that I know of that would do something like that. Maybe there is, but -- that's why we use a base system to try to quantify all of these.

Q. Well, because we're Monday morning quarterbacking this here, I'm just trying to think that, you know, when a vehicle reacts and changes lanes of travel verses to an unexpected event occurring in front of them, if their unexpected event continued to evolve, would that ever reset the reaction time?

A. I think I maybe understand what you're saying. Yeah, I mean -- there's no -- I don't know how to put it. That's why they try -- because there's so many situations that you can get into, right, that they're trying to account for all of those things. And I will tell you this much, right, but in general during the day -- and pretty much all accidents, that's why 1.5 has been so popular for so long, is that even Muttart as much as he might

dislike that number, everything seems to fall within that same area. You're never going to get -- 2.7, 2.8, 3 seconds, those numbers are reserved for nighttime. Like, that's nighttime type of stuff. Where you've got your visibility and contrast are so diminished, you're unable to distinguish things well enough to make any kind of judgment.

So, you know, if you -- when you talk about 1.6 and 2.2, that is a real big extreme with what people react to during the day. And, again, any given situation -- you can go and manipulate all those numbers you want and it will only go down to those numbers. You know, 2.2 is really high. But, then again, it's really less about the reaction and it's more about, you know, his actions, right, of what he's doing.

Q. Well, and that's why I'm trying to sit here Monday morning quarterbacking today. We're trying to think if, like, the unexpected event is, you know, is someone in your lane of travel, then, you know, potentially a second unexpected event of someone across all lanes of travel, that's what I was just trying to see, if there were, like, any kind of analysis that you'd go, "Ah, unexpected event,

people were reacting more to the car when it's at 15 degrees or maybe when it was more across the lane; right? That's what they're thinking when they're reacting to it because that's what they're seeing, but you can't -- even when you do the tests, you can't read someone's mind as to when that point actually takes place. You know, when does that occur it's happened.

So what they do is that they try to bring it back to a baseline, and that baseline is when that car first begins to turn. And so -- and then they look at the averages of people given all these different circumstances, right, and see how -- what is their time and how do they react to it.

So that's why it's -- you know, could it have been happening if they said it was happening, you know, that's probably true, but what I'm telling you is that what Muttart is doing is they are taking those into account, because they have to somehow -- you know, they have to make a common point so that you can keep the time and everything, you know, consistent.

Q. So based on your review of the data here on Figure 17 in the nonghosted image of the Ford, that's when it looks like Waterdown started to do some kind of

reaction with his vehicle; correct?
A. Yes.
Q. Can you tell us what his first thing he did was?
A. Well, sort of, was the beginning of the turn to the left.
Q. Okay. So he began to move into the northern lane of travel?
A. Yes.
Q. Would that be an appropriate reaction for seeing your lane of travel blocked?
MR. GOODNIGHT: Object to form.
A. I don't know if it's appropriate, but people do that all the time.
Q. (By Mr. Garrett) Okay. And it looks like, you know, after traveling whatever distance that is from there to there - let's call it 75 feet, you know, whatever it is --
A. It's 93.
Q. Okay. Sorry.
So after using 93 feet to move to the northern lane of travel, that's when the braking action was performed; is that correct?
A. Correct.
Q. And it looks like there was braking action and continued swerving to the northern direction; is

lateral movement is the middle ghosted position; all right? So back -- yeah, so go back -- yeah, that guy, that's when it starts to happen, and the end of his reaction time is that, yes. Exactly.

So at that point where it's solid in Figure 17, if you're going to apply those brakes even then hard, right, and swerve, he would have avoided it.

Q. So because he swerved and then applied his brakes we get the incident that we have?

A. Yes.

Q. So when you testify and tell the jury about your opinions in this accident, is it my -- am I understanding your testimony that you believe that had Mr. Waterdown reacted quicker or in different ways the incident could have been avoided? That's probably a real horrible generalization. Why don't you give me your words rather than you taking mine.

A. Had Mr. Waterdown either reacted sooner or braked harder or a combination of both, he could have avoided impacting the tractor-trailer.

Q. Why was the tractor-trailer in this position?

A. I don't know. I guess he was trying to -- lost or change -- I don't know. He's obviously trying to make a left. I think he was lost or looking for directions or something.

were just some of the discovery responses.

Just so I'm clear on some things. You don't have an opinion as to what, like, the rules of the road or the Oklahoma traffic laws are; is that correct?

A. Right. No.

Q. The extent of your analysis were the physical, studiable, tactile, touchable physics that occurred within this accident; is that --

A. It's the reconstruction of the physics of the accident.

Q. So I think we talked about, and you stated earlier, you don't know what Mr. Waterdown was thinking or doing; correct?

A. No.

Q. I mean, the only analysis we have is speeds, you know, pictures and brake marks and things of that nature; right?

A. That's correct.

Q. I believe you also stated that you're unfamiliar with all the Oklahoma traffic laws, moving violations, so you wouldn't have an opinion on any of those; correct?

A. No, I would not.

Q. And I don't want to put words in your mouth, but

C E R T I F I C A T E

STATE OF OKLAHOMA)
) ss.
COUNTY OF TULSA)

I, Kellie Erwin, a Certified Shorthand Reporter in and for the State of Oklahoma, do hereby certify that the above-named witness was by me first duly sworn to tell the truth, the whole truth and nothing but the truth in the case aforesaid; that said deposition of DAVID DANAHER was taken by me in stenograph on the 18th day of February, 2022, and thereafter reduced to typewritten form under my supervision; and that I am not an attorney for or relative of any of the parties involved in this action, or otherwise interested in the event of same.

WITNESS my hand at Tulsa, Oklahoma, this 14th day of March, 2022.

_____
Kellie Erwin, CSR, RMR

NOT TO BE SOLD

OKLAHOMA

DRIVER'S MANUAL

September 2017

PLANTIFF'S EXHIBIT
Ex 6

Chapter 9 Stopping and Following

STOPPING DISTANCES

There is no sure way to tell exactly how long it will take you to stop at a certain speed. Your stopping distance depends on:

- Your own reaction time.
- The weight of your vehicle.
- Weather and road conditions.
- The condition of your brakes.

There are three steps in stopping your vehicle—perception, reaction, and braking.

PERCEPTION, REACTION, AND BRAKING TIME

Step	Time	Explanation
Perception	About .5 seconds	See/hear danger
Reaction	About .66 seconds	Brain tells foot to brake
Braking/stopping	Depends on speed	Press brake until car stops

Suppose you're driving on the turnpike at night, exceeding the speed limit at 80 mph. A deer suddenly appears in your headlights. Will you be able to stop in time?

It will take 1.16 seconds for you to see the deer and move your foot to the brake. *Before you even start to brake, you will have traveled 140 feet. If you're on a good road in good weather, the braking distance at 80 mph will be 320 feet.* Your total stopping distance is 460 feet, longer than one-and-a half football fields!

Can you stop in time? Probably not. Why not? Because at 80 mph, you are over-driving your headlights—you can't stop your car within the distance you can see.

The following chart shows you the estimated distance your car will travel under *ideal* conditions, from the time you see danger until you come to a stop.

ESTIMATED EMERGENCY STOPPING DISTANCE